

AMENDMENTS TO THE CLAIMS

Listing of Claims:

1. (Currently Amended) A process for purifying a monoolefin stream, comprising:
contacting a gaseous monoolefin stream comprising one or more monoolefins with a Diels-Alder dienophile to convert one or more conjugated olefins present in the monoolefin stream to a Diels-Alder adduct;
and removing the Diels-Alder adduct from the monoolefin stream, thereby purifying the monoolefin stream such that it comprises less than about 50 parts per million (ppm) conjugated olefins.
2. Canceled.
3. (Currently Amended) A process according to claim 2-1 wherein said Diels-Alder dieneophile is selected from the group consisting of maleic anhydride, ~~derivatives of maleic anhydride, benzoquinone, derivatives of benzoquinone,~~ dialkyl fumarates, dialkyl maleates, dialkylacetylenedicarboxylates, and combinations thereof.
4. (Original) A process according to claim 3 wherein said Diels-Alder dieneophile is maleic anhydride.
5. (Previously Presented) A process according to claim 1 wherein said conjugated olefins comprise at least about 4 carbon atoms per molecule and no more than about 10 carbon atoms per molecule.
6. (Original) A process according to claim 5 wherein said conjugated olefins comprise at least about 4 carbon atoms per molecule and no more than about 8 carbon atoms per molecule.

7. (Original) A process according to claim 1 wherein said conjugated olefins are selected from the group consisting of 1,3-butadiene, 1,3-pentadiene, 1,3-hexadiene, 2,4-hexadiene, 1,3,5-hexatriene, 1,3-heptadiene, 2,4-heptadiene, 1,3,5-heptatriene, 1,3-octadiene, 2,4-octadiene, 3,5-octadiene, 1,3,5-octatriene, 2,4,6-octatriene, 1,3,5,7-octatetriene, 1,3-nonadiene, 2,4-nonadiene, 3,5-nonadiene, 1,3,5-nonatriene, 2,4,6-nonatriene, 1,3,5,7,nonatetraene, 1,3-decadiene, 2,4-decadiene, 3,5-decadiene, 4,6-decadiene, 1,3,5-decatriene, 2,4,6-decatriene, 3,5,7-decatriene, 1,3,5,7-decatetraene, 2,4,6,8-decatetraene, 1,3,5,7,9-decapentaene, and combinations thereof.
8. (Original) A process according to claim 7 wherein said conjugated olefins are selected from the group consisting of 1,3-butadiene, 1,3-pentadiene, 1,3-hexadiene, 1,3-heptadiene, 1,3-octadiene, 1,3-nonadiene and 1,3-decadiene.
9. (Original) A process according to claim 1 wherein said monoolefins comprise normal alpha olefins.
10. (Original) A process according to claim 1 wherein said monoolefins are selected from the group consisting of 1-butene, 1-pentane, 1-hexene, 1-heptene, 1-octene, 1-nonene, 1-decene, and combinations thereof.
11. (Original) A process according to claim 10 wherein said monoolefins are selected from the group consisting of 1-butene, 1-pentene, 1-hexene, and combinations thereof.
12. (Previously Presented) A process according to claim 1 wherein said purified monoolefin stream comprises less than about 25 parts per million conjugated olefins.
13. (Previously Presented) A process according to claim 1 wherein said purified monoolefin stream comprises less than about 10 parts per million conjugated olefins.

14. Canceled.
15. (Previously Presented) A process according to claim 1 wherein said is selected from the group consisting of distillation, adsorption, membrane separation, and combinations thereof.
16. (Previously Presented) A process according to claim 1 wherein said removing is conducted using reactive distillation.
17. (Original) A process according to claim 1 wherein said monoolefins are 1-butene and said conjugated olefins are 1,3-butadiene.
18. (Original) A process according to claim 17 wherein said dienophile is maleic anhydride.
19. (Previously Presented) The process according to claim 1 wherein said Diels-Alder dienophile is generally represented by the formula:

$$R^1R^2C = CR^3R^4$$
where
 $R^1 = H, C(=O)OR^5, C(=O)R^6, C(=O)NR^7R^8, CN, C_1 \text{ to } C_{30} \text{ alkyl, and aromatic,}$
 $R^2 = H, C(=O)OR^5, C(=O)R^6, C(=O)NR^7R^8, CN, C_1 \text{ to } C_{30} \text{ alkyl, and aromatic,}$
 $R^3 = H, C(=O)OR^5, C(=O)R^6, C(=O)NR^7R^8, CN, C_1 \text{ to } C_{30} \text{ alkyl, and aromatic,}$
 $R^4 = H, C(=O)OR^5, C(=O)R^6, C(=O)NR^7R^8, CN, C_1 \text{ to } C_{30} \text{ alkyl, and aromatic,}$
 $R^5 = C_1 \text{ to } C_{10} \text{ alkyl, aromatic, and } (H)C=CH_2,$
 $R^6 = C_1 \text{ to } C_{10} \text{ alkyl, aromatic, and } (H)C=CH_2,$
 $R^7 = C_1 \text{ to } C_{10} \text{ alkyl, aromatic, and}$
 $R^8 = C_1 \text{ to } C_{10} \text{ alkyl, and aromatic.}$
20. (Previously Presented) The process according to claim 1 wherein said Diels-Alder dienophile is generally represented by the formula:

$R^1C \equiv CR^2$ where

$R^1 = H, C(=O)OR^3, C(=O)R^4, C(=O)NR^5R^6, CN, C_1 \text{ to } C_{10} \text{ alkyl, and aromatic,}$

$R^2 = H, C(=O)OR^3, C(=O)R^4, C(=O)NR^5R^6, CN, C_1 \text{ to } C_{10} \text{ alkyl, and aromatic}$

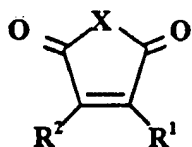
$R^3 = C_1 \text{ to } C_{10} \text{ alkyl, and aromatic,}$

$R^4 = H, C_1 \text{ to } C_{10} \text{ alkyl, and aromatic,}$

$R^5 = C_1 \text{ to } C_{10} \text{ alkyl, and aromatic, and}$

$R^6 = C_1 \text{ to } C_{10} \text{ alkyl, and aromatic.}$

21. (Previously Presented) The process according to claim 1 wherein said Diels-Alder dienophile is generally represented by the formula:

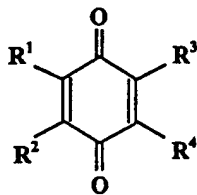


where $X = O, N, \text{ and } S,$

$R^1 = H, C_1 \text{ to } C_{10} \text{ alkyl, and aromatic, and}$

$R^2 = H, C_1 \text{ to } C_{10} \text{ alkyl, and aromatic.}$

22. (Previously Presented) The process according to claim 1 wherein said Diels-Alder dienophile is generally represented by the formula:



where

$R^1 = \text{H, C}_1 \text{ to C}_{10} \text{ alkyl, and aromatic, and (H)C=CH}_2$,

$R^2 = \text{H, C}_1 \text{ to C}_{10} \text{ alkyl, aromatic, and (H)C=CH}_2$,

$R^3 = \text{H, C}_1 \text{ to C}_{10} \text{ alkyl, aromatic, and (H)C=CH}_2$, and

$R^4 = \text{H, C}_1 \text{ to C}_{10} \text{ alkyl, aromatic, and (H)C=CH}_2$.